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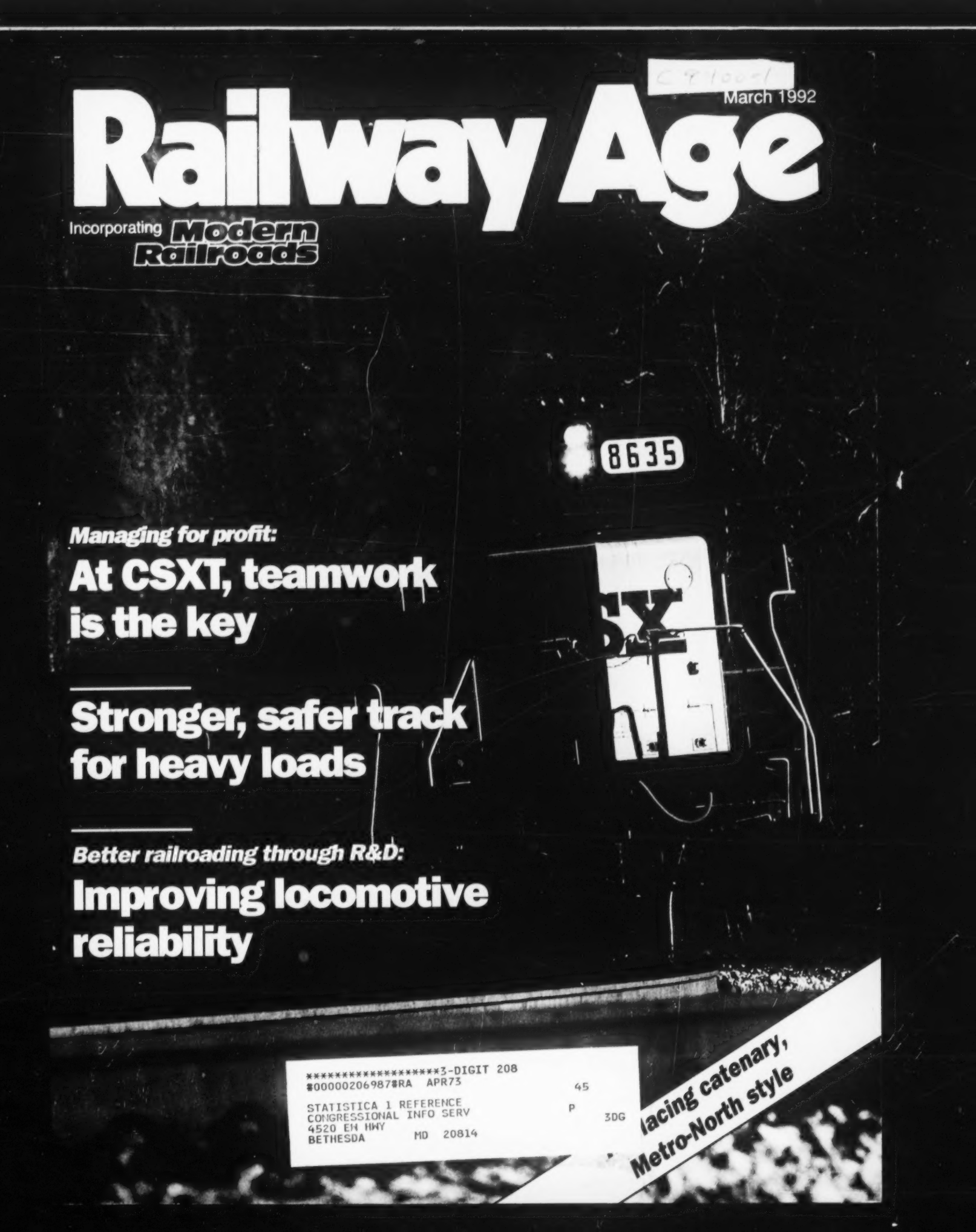
March 1992

Railway Age

Incorporating Modern Railroads



Managing for profit:

At CSXT, teamwork is the key

Stronger, safer track for heavy loads

Better railroading through R&D:

Improving locomotive reliability

...lacing catenary, Metro-North style

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Market Outlook

Equipment

Amtech: Received orders in January for 275,000 automatic equipment identification (AEI) tags valued at $6-7 million. Conrail, Norfolk Southern, and CSX Transportation were among the purchasers.

Massachusetts Bay Transportation Authority: Awarded a $25.6 million contract to Union Switch & Signal to design, supply, and install an integrated transit control system.

New York City Transit Authority: Heckler Electric Co. will install Avtec's ACCESS (Advanced Concept Communications Exchange & Signaling System) at NYCTA's Jay Street Station — the first transit application of the system, which features color touchscreen control of radio circuits, telephone lines, and public address systems.

Facilities

Dallas Area Rapid Transit: Awarded an $86.6 million contract to S.A. Healy Co. to construct the 3.5 mile tunnel segment of the DART light rail system. The Healy bid was about $35 million below DART's engineering estimate. The DART board also approved the $51 million purchase of 18 miles of right-of-way from the Santa Fe, including a 40 acre freight yard that will be used for a light rail vehicle service and inspection facility.

Sea-Land Service/CSX Intermodal: Will upgrade and more than double the capacity of the intermodal terminal at Little Ferry, N.J. which CSXI operates for Sea-Land. The project, which is scheduled to begin this summer, and take about two years to complete, will increase double-stack car spots from 25 to 69 and increase storage space from 460 to 1,046 containers. Storage space for 180 chassis will be added. The expansion announcement last month followed the completion of a purchase transaction between CSXI and the New York, Susquehanna & Western. In that transaction, CSXI paid $21 million for property owned by NYS&W, including 24 acres that comprise the present Little Ferry facility.

Revenue Freight Carloadings

Commodity	Feb 15 week	Feb 8 week	Feb 1 week	Jan 25 week	Jan 18 week
Grain	30,351	31,148	29,923	30,623	27,864
Other farm products	1,678	1,806	1,737	1,779	1,665
Metallic ores	13,763	13,928	14,159	13,433	13,935
Coal	123,374	124,679	125,849	126,759	122,771
Crushed stone, sand and gravel	10,494	10,155	10,108	9,976	8,958
Nonmetallic minerals	8,229	8,660	7,646	7,699	7,364
Grain mill products	10,783	10,582	10,333	10,207	10,417
Food and kindred products	9,275	9,283	8,987	9,275	9,109
Primary forest products	9,287	9,222	9,336	8,769	8,921
Lumber and wood products	5,901	5,768	6,576	5,988	5,776
Pulp, paper and allied products	10,598	10,490	10,468	9,996	10,489
Chemicals	29,824	27,964	29,166	28,409	28,958
Petroleum products	5,374	5,198	4,815	4,973	5,036
Stone, clay and glass products	8,184	8,430	8,163	7,693	7,662
Coke	5,312	5,162	5,539	4,933	5,668
Metals and products	9,884	10,481	11,273	10,095	10,054
Motor vehicles and equipment	16,217	16,731	17,452	14,917	14,481
Waste and scrap materials	8,366	8,214	8,237	8,158	8,191
All other carloads	6,175	6,602	6,732	5,399	5,757
Total cars loaded	**323,089**	**324,503**	**326,501**	**319,081**	**313,076**
% change from previous year	(0.7)	0.9	3.0	1.6	(3.6)

		%change
Cumulative total: 7 weeks	2,187,525	1.8

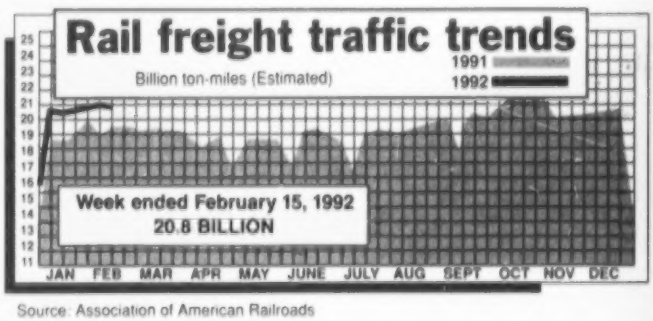
Estimated revenue ton-miles	20.8	21.0	20.9	20.6	20.3
% change from previous year	2.0	4.5	4.5	5.1	(0.5)

Total:	**1991**	**1990%**	**change**
7 weeks	141.0	134.6	4.8

Intermodal Traffic

	Feb 15	Feb 8	Feb 1	Jan 25	Jan 18
Trailers	63,609	58,593	63,097	59,101	58,814
Containers	66,417	62,928	66,139	62,727	62,258
Total	**130,026**	**120,211**	**129,236**	**121,828**	**121,072**
% change from previous year	10.5	1.1	5.5	3.8	2.6

		% change
Cumulative total: 7 weeks	833,530	4.3


Rail freight traffic trends
Billion ton-miles (Estimated)
1991
1992
Week ended February 15, 1992
20.8 BILLION
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

Source: Association of American Railroads

Freight Cars

	DELIVERED		ORDERED		ON ORDER AND UNDELIVERED	
	4th quarter 1991	4th quarter 1990	4th quarter 1991	4th quarter1990	Jan 1, 1992	Jan 1,1990
Built new by carbuilders	5,943	7,541	6,383	6,655	9,215	11,328
Rebuilt	377	1,083	298	1,083	50	0
Total	**6,320**	**8,624**	**6,681**	**7,738**	**9,265**	**9,923**

Locomotives (new & rebuilt): Not available
Source: American Railroad Car Institute

CSXT: Managing for profit

"The key to everything we're doing is teamwork between operations and sales/marketing. We're pleased with what we see in our customer surveys."

Alvin R. "Pete" Carpenter became president and chief executive officer of CSX Transportation on Jan. 1. He takes over a railroad that until recently had an unusual organization structure, now changed to a structure better designed to promote what Pete Carpenter wants: Teamwork. But he also takes over a railroad that has been on the move. CSXT was the first major road to consolidate train control functions in a single location. It is creating a customer service center that has already won international acclaim. Its safety record has improved dramatically. It has clearly-defined "quality" goals. Its new president and CEO may be new to his job, but he's a career employee with a service record dating back to 1964 on a CSXT predecessor road. In conversation with *Railway Age* Senior Editor Gus Welty, Pete Carpenter talks about CSXT's goals and about how it plans to reach them.

RAILWAY AGE: What are the strategies, the tactics, that CSX Transportation will be using to improve profitability?
CARPENTER: Our strategy is built around improving return on invested capital, at least to a level where we are indeed earning our cost of capital. We intend to improve cash flow significantly. And we fully intend to reduce our operating ratio by about five points in the next three years.

RA: Your operating ratio last year was 87.4, adjusted. . .
CARPENTER: Yes, after adjustment for the productivity charge we took in the fourth quarter. Our intention is to take it down to 82. We also have some lease costs in our ratio that other railroads don't have. Our real target is to be at about 80, as a railroad. To do that, we're going to have to do a number of things.

RA: Such as?
CARPENTER: We're going to have to continue improving our safety record. Right now, we're second in safety among Class I railroads on personal injuries, and we're first in safety based on derailment frequency. Just a few years ago, we ranked close to last. We intend to be the best in both categories. We have to improve our quality of service. We survey our customers annually, and we have moved up steadily over the past several years in terms of our service reliability, acceptance of cars and freight damage prevention. We intend to improve further in these areas.

"Deregulation has taught us that no one owes us any business. We have to earn the business."

—Pete Carpenter

RA: What about the revenue side?
CARPENTER: Obviously, you're not going to improve revenue unless you're performing the right kind of service. We have been the leader in increasing revenue yield per carload, and we intend to continue in that pattern. And, while in the early 1980s railroads were not able to do much through rate increases, in the past two or three years we have been very successful in getting some portion of inflation back through rate increases. Our target is to recover at least 75% of inflation through this method. To put it simply, our strategy in terms of safety and service and operating performance is to be the best in every category.

RA: What about marketing strategies?
CARPENTER: We define our markets in narrow segments, not broad groupings such as chemicals or automobiles. We're convinced that success is in the details. We talk about specific market segments—for example, plastic pallets in the chemicals market, and even further down to specific origin-destination movements. We don't talk about the motor-vehicle business as a whole. We talk about General Motors or Ford business into Florida, as a specific example, and we also talk about the movement of used vehicles from Florida into the northern areas where many of them are sold. That's the kind of close focus we're bringing to each element of sales and marketing and operations.

RA: Every railroad has problems with surplus capacity, equipment and plant. What are you doing to attack this problem?
CARPENTER: Traditionally, trucks have marketed their surplus capacity much better than railroads. Utilization of surplus capacity is a primary target of ours. We've had some success, as one example, in moving coal in one direction and using the cars for ore on the backhaul. We've also been successful in moving fertilizer from Florida and using the cars to move grain products, primarily chicken feed, back into the Southeast. We have a problem with short-haul, low-margin gravel movements and we have surplus capacity of coal cars between December and April when the Great Lakes are frozen. One of the questions we're working on now is, can we use

these surplus cars, with opportunity pricing, to move gravel during the winter months? As for excess train capacity, we're looking at the I-95 market on the Eastern Seaboard. If we have excess capacity on some of our dedicated trains between Philadelphia and Florida, for instance, can we work with our intermodal unit to fill some of that capacity? We're looking at a lot of strategic pricing initiatives as they relate to excess capacity of all kinds.

RA: What does the CSXT strategic plan call for in terms of capital improvements over the next five years? What will be emphasized?
CARPENTER: The $525 million to $650 million range is the general outlook we currently see in capital spending annually over about the next five years. The focus will remain on recapitalizing those assets which are essential to our core network.

RA: Still, your emphasis seems to be on making better use of what is. . .
CARPENTER: Frankly, I think that the easy way to run a railroad into the ground is to solve every problem with more capital. We are absolutely committed to producing more cash flow and better returns for our shareholders. Given that, we always have to be looking for managerial solutions, as opposed to capital solutions, for the problems and issues that we face.

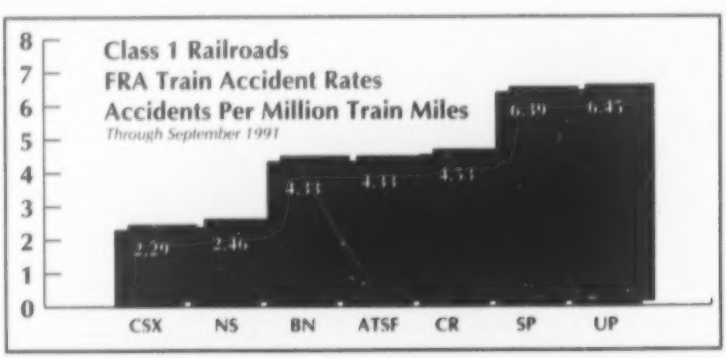
RA: Managerial solutions. What excites you?
CARPENTER: I think the most exciting thing for railroads in the 1990s is the use of leading-edge technology in management information systems to assist us in using our assets more efficiently and effectively. You know the statistics, as to how much time a boxcar, gondola, or any other car type actually spends in motion. Locomotives cost more that $1 million apiece and it would be rare to find a locomotive actually being used, hauling freight, more than 50% of the time. A locomotive spends much of its time in a siding awaiting fuel and servicing, in a shop, or in a yard awaiting movement on a linehaul train. In each of these areas lies a tremendous potential for the railroad industry to find ways to truly utilize assets effectively.

RA: But improvements have been made in these areas. . .
CARPENTER: We've come a long way, but we haven't solved the problems yet. Having said what I've said about utilization — interesting objectives and noble goals—how do you track things? We know this is critically important because all organizations manage what they measure. At CSXT, our investments in management information technologies are key to making dramatic progress in asset utilization. By business line, we now track improvement in aggregate contribution by business module and improvement in equipment utilization per car-day in terms of each module. The only way we're going to move the numbers in the right direction is by utilizing assets better—for example, in getting more turns per car and increasing the time locomotives are productive, hauling freight.

RA: What are you doing to get to these goals?
CARPENTER: The key to everything we're doing is teamwork between operations and sales/marketing. We've focused on a number of areas. Grain is an example where we have made significant improvements over the past several years. In 1991, unit grain train performance improved by 6.4%, or more than one day transit time, for a saving of more than 43,000 car-days. To give you a frame of reference for some of this progress, in 1984 we had virtually no unit train feed grain movements. Today, nearly one-fourth of our feed grain moves occur in blocks of 65 or more cars and 88% are in scheduled blocks of 15 or more cars.

RA: You talk about teamwork. . .
CARPENTER: We're very optimistic about this business and we believe that our quality initiatives in recent years have served us well. I feel very, very good about our management team. Jerry Davis [CSXT chief operating officer] is not only a top-drawer operating officer, he's also very sensitive to the needs of our customers. Those same attitudes go up and down the line. As you well know, it was not always that way in the railroad business. But deregulation has certainly taught all of us that no one owes us a return, no one owes us any business. Each and every day, we have to get up and earn the business that our customer base can provide, for that day in the future. We're pleased with what we see in our customer surveys, and we're proud of the awards we've won from our customers. We're proud that our Customer Service Center recently won an international award, naming it as the best among non-manufacturing companies and the world. We intend to work very hard to continue to earn the trust we have.

RA: Some years ago, the railroad was split into three entities, CSX Rail Transport, CSX Distribution Services, and CSX Equipment, each of them with a president, one based in Jacksonville and two based in Baltimore. Now, CSXT has moved back to a more traditional kind of organization. Was the three-unit organization a noble effort that didn't work?
CARPENTER: I'm not sure how noble it was, but it was a well-intentioned effort that didn't work. There is one business here, and that structure attempted to make it into three or four businesses, four if you include CSX Technology. I had some experience with that structure, because I headed Rail Transport and then Distribution Services. Most of the successes that we're proud to tell you about today came about as the



result of tremendous teamwork between sales/marketing and operations. These are the things that have driven our bottom line in a positive way. But when your people are apart, the problems of distance, coupled with separate reporting relationships, it just accentuates the natural differences that sales/marketing has in any organization in working with counterparts in production/operations. Over the past year or so, we've been moving away from the three-unit structure. What we have now is serving us well, and I think it will continue to serve us well.

RA: But CSX Intermodal is a separate organization. . .

CARPENTER: There, I take a different view. Separating CSX Intermodal into a business unit has been good. It's a different business from the railroad business. Much of CSXI's traffic never touches the railroad because they serve as a third party for a lot of business that moves on western carriers. Certainly, some of the business moves over us or Conrail or Norfolk Southern in the East. But CSXI is national in its operation. And it has a close working relationship with Sea-Land (another CSX unit). So it's good, I believe, to have the CSXI group standing apart, using their entrepreneurial skills to maximize their profit and return. And CSXT has a good, close working relationship with CSXI.

RA: Within CSXT, though, you've set up at least one separate entitiy. . .

CARPENTER: In a way, yes, our fertilizer business in the Bone Valley of Florida, which is about a 40-square-mile area for phosphate business. It has a unique franchise among our markets. We set up a separate business unit so that they could be free from the bureaucracy of the whole railroad and concentrate on improving the use of their assets, their contribution per car-day, their aggregate contribution in that business segment. We've given them a lot of latitude. Ultimately, of course, what they do fits into the larger organizational picture. But we have systems set up for all of their budgets, so that they're able to make the trade-off decisions, whether to pursue a given piece of business. That decision-making process is more responsive than it would be, coming from Jacksonville, where we deal with broader costs and structures. We're watching that operation very carefully, and we're confident that they're going to make the Bone Valley operation more profitable for CSXT.

"If you start adding up the opportunities, it appears that there will be good news for American coal producers."

RA: Does that kind of handling apply elsewhere?

CARPENTER: Not really. The coal business, for example, originates in a fairly compact area. But it literally goes all over our system. So we don't have a comparable situation in any of our other bulk-commodity businesses and certainly not in our merchandise business.

RA: What about the future of coal and CSXT?

CARPENTER: We're looking at modest growth, about 2% per year.

RA: But isn't the export market one with greater potential?

CARPENTER: That's the one significant opportunity that could change that 2% number. But I want to plan this business, for our shareholders, in a manner that does not count on bonanzas from the revenue side because a lot of times those bonanzas have a way of being over-receding. But yes, there are certainly opportunities out there that seem promising.

RA: Specifically?

CARPENTER: England mines about 80 million tons of coal a year at prices a bit more than $100 a ton, F.O.B. the mine. We've been moving coal to that market, from a base of about zero four of five years ago to about three million tons a year now, primarily for steel production and to utilities.

RA: What about the rest of the "new" Europe?

CARPENTER: In the former West Germany, they mine 75 million to 85 million tons of hard coal per year. Only three or four mines can produce coal as low as $135 per ton at the mine. Most of their mines produce coal at closer to $200 per ton. Mines in the former East Germany produce about 270 million tons of brown coal per year, but it has a sulphur content that is totally unacceptable by today's German standards, so Germany has announced its intention to phase out that coal. At the same time, Germany is at a crossroads, so far as continuing policies of providing subsidies and using employment of guest labor are concerned. They have had heavy subsidies in agriculture and mining. Now, the new Germany is embracing free-market principles. As it does, the country is shutting down facilities that require heavy subsidies. And with unemployment high, policy questions are also being raised about the guest, or immigrant, workers who do most of the work in the mines.

RA: And the opportunity that this creates?

CARPENTER: The Germans have said that they intend to move away from the use of German coal. One indication of the seriousness of their intent might be their purchase of a 50% interest in our largest coal producer, Consolidation Coal. We're very confident that we will share in the growth of American coal exports into Europe. If you start adding up the opportunities—all the production going away in the next decade or so, 80 million tons in England, 80 million in tons in the former West Germany, 270 million tons of high-sulphur coal in the former East Germany—it appears that there will be good news for American coal producers, for CSX Transportation and, I might add, for our friends at Norfolk Southern.

RA: And this American coal can be landed in Europe at. . .

CARPENTER: At less than$60 per ton. How big is the opportunity? It's big. But my forecast of 2% growth in coal traffic essentially ignores it, even though the export growth is probably going to come. Why? Because I'm not going to start planning for this company on the basis of what appears to be a tremendous bonanza out there in the future.

RA: What about domestic coal movements, and the impact of clean-air legislation?

CARPENTER: You've heard the initial estimates about all the western, low-sulphur coal that would be moving into the East and Southeast. I don't think anyone in the West, producer or railroad, is as optimistic about that as they were on the day the legislation was signed. The fact is that a number of the utilities they thought would use western coal are moving instead toward installation of scrubbers. CSXT has held a steady course on this, because of our experience and because of what our consultants tell us—and as you know, I've spent a number of years dealing with coal traffic, here and at Chessie System. Our conclusion is that by 1995 we will gain movement of 17 million to 20 million tons of coal, with our low-sulphur Southern Appalachian coal displacing some high-sulphur coal not mined on our lines. We estimate that we would lose some higher-sulphur tonnage but gain some lower-sulphur tonnage and, on balance, would have that net gain. But on a base of moving 190 million tons of coal per year, that domestic gain isn't huge.

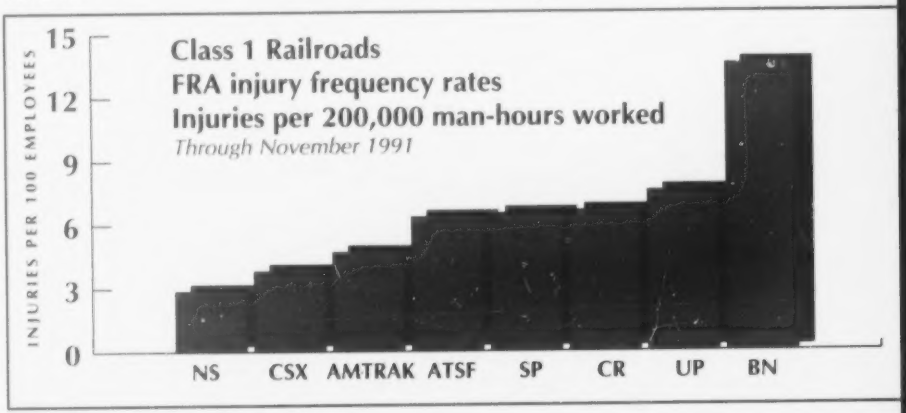
RA: What about your ability to reduce costs, specifically labor costs, as we were talking about with respect to the operating ratio?

CARPENTER: In the fourth quarter of 1991, we took a restructuring, productivity charge of $647 million, 90% of which was for investment in labor savings. Nobody in my chair moves as fast as he would like to in this area. But we've been on the leading edge, I think, and if you put our average crew size up against that of other major railroads, you'll find that to be true. But these things never move quickly enough. It's been a tortuous process for our industry and our railroad, moving from a crew of five persons down to where we are today. Now, we're moving to where we have to be, to a conductor-only train crew on through freights, where we're competing with trucks and having a rough time, largely because of our higher labor costs.

RA: What about management reductions?

CARPENTER: At the time of deregulation and at the time of the merger of Chessie System and Seaboard System, we had a large bureaucracy. We've made great progress. We've gone through a 20% downsizing, and in January we announced that we were planning to reduce management ranks by 8%. Additional reductions are planned for the next couple of years, as we continue to become efficient, pare down and flatten the organization. We want to empower people at lower levels to make decisions and get away from the old pyramid, quasi-military organization that has kept railroads caught up in their own underwear for decades.

RA: Back to technology. Do you really see the MIS side as where the opportunities are?



CARPENTER: I do. You've seen the kind of technology we're employing at our Customer Service Center and at our Transportation Control Center. It's not dreaming the impossible to think what advances in that kind of technology, five years out, might do for your signaling system or for other kinds of control and communications systems. Yes, I think there are technological opportunities in the design of new coal cars and other types of equipment. There are some exciting things that may be coming in the intermodal arena. However, I think opportunities in the information systems area are the future in a technological sense. And I believe we've just started to tap into it. As state-of-the-art as our centralized despatching center is, for example, I suspect that by 1995 or so we'll be planning for the next generation. As you look at it today, it's hard to imagine what on earth could replace it. But I'm sure people thought the same thing when they saw the first ctc board. I know I did. But things move so much faster now. It took decades for the old ctc board to give way, but I'm convinced that our control center will only last four or five years before technological improvements will change it dramatically. I should add, and I know Jerry Davis has told you this, we've looking at technology that will produce improved service quality in the safest possible manner, and that's why we're not leaping into any of the advanced train control system technologies being promoted. We think they're exciting, that they're scratching the right itch, but that they're not there yet.

RA: So, overall, you're putting the railroad back together, but segmenting it on both the sales/marketing and operating sides, in the latter case to get a better handle on the operating ratio.

CARPENTER: You could say that. We know that we are not doing everything right, not yet. We know that in terms of maintenance-of-way spending, by any measure we're doing very well. We have the best derailment record in the industry. But there are also categories where we have some catching-up to do, and one has to do with locomotive performance. We have had a substantial improvement in mean time between failures—up 15 1/2% to 79.8 days from 1989 to 1991—and in other measures relating to reliability, and this is reflected in the kind of service our customers have been receiving. The challenge in all of our considerations of segments of the operating ratio is to make sure we're getting at least the same bang for the buck that our competitors are getting. And then more. ■

Costing commuter services

Caltrain reports the results of a survey that may help narrow the data gap that commuter rail planners confront when they consider new or expanded services.

By GEORGE E. GRAY
Deputy District Director
Planning and Public Transportation
California Department of Transportation

Commuter rail services in North America are currently growing at a healthy pace both in ridership for the older systems and in the number of operations. Interest in this mode of urban travel is continuing to increase, and indications are that a number of new and expanded services will be added to the commuter rail inventory in the 1990s.

In order to study the feasibility of new or added commuter rail services, it is useful to estimate the full range of costs and revenues associated with the proposals. At present, aggregated costs and operating data of the existing services are scarce. The Urban Mass Transportation Administration's (UMTA) report, *Compendium of Urban Mass Transportation Statistics*, is based on reported transit operating statistics as required by Section 15 of the UMTA statutes and provides some basic information, but not enough data to be of much assistance for those interested in identifying opportunities for improving the efficiency of existing commute rail services or analyzing the feasibility for new or expanded services.

The American Public Transit Association's 1990 *Transit Operating and Financial Statistics* is much the same as the UMTA Section 15 report and is not, in the judgment of many, adequate for service feasibility studies.

The research into the operating statistics of existing rail commute services reported herein was initiated to help fill the need for such data. It also served the more immediate need for statistical information on North American commuter rail services in order to provide comparison data relating to the fare structure of the Caltrain regional rail service that operates in California between San Francisco and San Jose. As responsible state manager for this service, the author's basic problem and need for information was this: The Caltrain service, by legislative mandate, is to operate at a minimum revenue recovery ratio of 40% based on an income/cost definition established by legislation that is very restrictive and believed to be more constrained than any other in the industry. For instance, operator incentive payments, advertising, property taxes, and insurance are all charged to operating expense under the definition established in the current California statutes.

With the late 1990 Mideast crisis and its resulting fuel cost fluctuations, the Peninsula Commute Service recovery ratio was calculated at about 32.8%, with contributed local funds used to bring the income up to the required 40% level. Although efforts to attempt to reduce the operating costs continued, it was apparent that until the service is operated directly by those paying the costs, thereby reducing many of the expenses caused by contracting through the Southern Pacific Transportation Co., the opportunities to reduce costs in the short run were few. This was especially true in the face of unstable fuel prices and existing Southern Pacific labor agreements.

The obvious alternative to lowering costs was to raise fares, which had been static since 1982 at about 6 cents per passenger-mile. A fare increase is never welcome, to either management or user, but there was little choice since there were no signs of increased federal or state subsidy.

Table 1. SUMMARY OF OPERATING STATISTICS[a] AND COSTS FOR NINE NORTH AMERICAN PROPERTIES[b]

(Representing New York, New Jersey, Toronto, Chicago, Boston, Philadelphia, Washington, D.C./Baltimore, San Francisco/San Jose)

	Range	Average	PCS	BART[c]
Average trip length	13.9-29.4 mi	22.0 mi	23.3 mi	12.6 mi
Operating cost per passenger	$4.07-$8.00	$5.28	$4.37	$2.74
Fare revenue per passenger	$1.48-$3.54	$2.51	$1.48	$1.40
Operating costs per passenger-mile	$0.17-$0.44	$0.26	$0.19	$0.20
Fare revenue per passenger-mile	$0.06-$0.17	$0.12	$0.06	$0.11
Total revenue per passenger-mile	$0.07-$0.19	$0.125	$0.07	$0.12
Passengers per car-mile	1.31-2.60	1.75	2.60	?
Passenger-miles per train-mile	75.5-337.0	191.5	204.6	?
Revenue recovery ratio[d]	38%-62%	50%	38%	55%

[a]Total passengers per year: 272 million.
[b]Properties and year of reported statistics: Long Island RR (F.Y. 1989), New Jersey Transit (F.Y. 1990), GO Transit (F.Y. 1990), Metra RTA Calendar 1989), NICTD (Calendar 1989), MBTA (F.Y. 1990), PCS, (F.Y. 1990), SEPTA (F.Y. 1990), MARC (F.Y. 1990).
[c]BART statistics ('90 F.Y.) are not included in the Range and Average computations.
[d]Total revenue divided by operating cost.
Note: Problems in definition of terms may exist, see text.

•Survey need. In the late 1970s, the State of California opposed the proposed service abandonment by the Southern Pacific of the San Francisco-San Jose commute service. This ultimately resulted in a contract, beginning July 1, 1980, between the state and the Southern Pacific for continuing the service. This contract provided for a 10-year service continuation with options for contract extension. As the initial 10-year period was drawing to a close, the state informed local governments of its intent to turn the service over to local control. A joint powers authority was formed composed of representatives of the three counties involved (San Francisco, San Mateo, and Santa Clara). This authority began discussions with the Southern Pacific towards purchase of the service and was successful in obtaining legislation to extend

Table 2. STATISTICAL SUMMARY OF COMMUTER RAIL SERVICE

	PCS	SEPTA	LIRR	GO Tran.	Metra	MBTA	NJT	MARC
Reporting year	'90 F.Y.	'90 F.Y.	'89 F.Y.	'90 F.Y.	1989	'90 F.Y.	'90 F.Y.	'90 F.Y.
Miles of line(s)	47	282	595	245	424	244	781	151
Trains/workday	52	360	732	145	598	373	569	64
Trains/Saturday	26	248	465	75	269	136	256	0
Trains/Sunday	20	173	471	62	135	68	216	0
Passengers/year(millions)	6.4	25.7	75.4	24.0	67.8	19.2	46.9	3.5
Passenger-miles/year(millions)	149	357	2019	456	1415	348	1020	103
Train-miles/year(millions)	0.73	4.73	7.61	1.35	5.74	2.60	6.68	0.61
Operating cost/year(millions $)	27.8	157.9	603.1	179.1	275.4	88.6	279.8	17.2
Farebox revenue/year(millions $)	9.4	61.1	266.7	86.5	142.8	unknown	143.2	10.1
Total revenue/per(millions $)	10.7	66.3	2818.2	95.2	163.7	33.3	173.6	10.2
Seat-miles/year(millions)	359	1443	6917	1979	4551	1500	4397	267
Operating cost/passenger ($)	4.37	6.15	8.00	4.09	4.07	4.61	5.96	4.98
Fare revenue/passenger ($)	1.48	2.38	3.54	2.51	2.11	1.74	3.05	2.92
Total revenue/passenger ($)	1.68	2.58	3.82	2.68	2.42	1.74	3.70	2.95
Operating cost/passenger-mile ($)	0.19	0.44	0.30	0.28	0.20	0.25	0.27	0.17
Fare revenue/passenger-mile ($)	0.06	0.17	0.13	0.14	0.10	0.10	0.14	0.10
Total revenue/passenger-mile ($)	0.07	0.19	0.14	0.16	0.12	0.10	0.17	0.10
Passengers/car-mile	2.60	2.07	1.31	1.96	2.30	1.46	1.33	1.34
Passenger-miles/train-mile	204.6	75.5	265.5	337.0	246.5	135.4	152.7	169.0

Note: Problems in definition of terms may exist, see text.

the state responsibility for management of the service until June 30, 1992, giving the authority time to negotiate for the purchase of the rights-of-way.

To provide service continuity, an extension to the original state management contract was consummated in June 1990 providing for a service discontinuance on 90-day notice by either party with such notice to be given no sooner than March 1, 1991. On Jan. 2, 1991, the joint powers authority and the railroad executed a letter of agreement covering the terms and conditions for the purchase of the rights-of-way.

Since the state expects to relinquish the service to the joint powers agency or its successor by no later than June 30, 1992, and has a cost-sharing agreement with them, a decision on any fare increase must include agreement from the transit authorities of the three counties (Muni for San Francisco, Sam Trans for San Mateo County, and the Santa Clara Tran-

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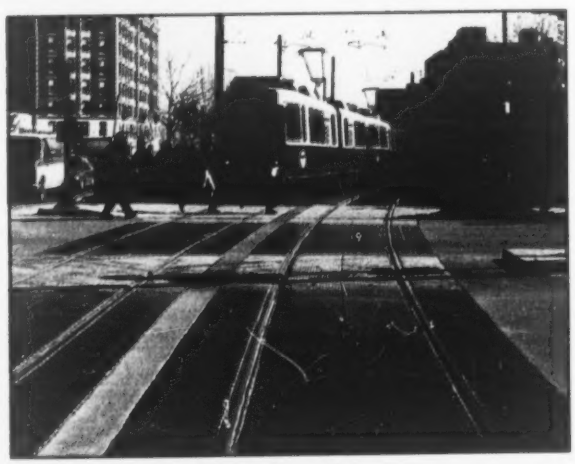

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sit Authority) It was felt that the best marketing strategy for a fare increase would be to present evidence that Caltrain was operating efficiently and that user costs were comparatively low.

To make the case, after consulting existing commuter rail cost data as available and finding it inadequate for the intended purposes, a survey was initiated requesting information from all the readily identified North American commute rail operations.

Seventeen requests for information were sent out in September 1990. The request packet included data and information covering the Caltrain operation, a filled-in form covering Caltrain, and a blank form for the data sought. Several of the 17 requests were known duplications. For example, in the Chicago area, inquiries were sent not only to Metra but also to the RTA and to the railroads providing service for Metra. The goals were to obtain information adequate to use cautiously as (1) a report card for existing services to measure their condition; (2) an indication of the health of particular commute rail services; and (3) an indication of cost and revenue levels that may be expected from such services.

•Survey results. Ultimately, results were obtained from all the major commute rail services in the U.S and Canada. The results covered nine major urban areas in North America. Several services were not included in the subsequent statistical analysis either because of their newness or because of their demise during the reporting period, which was generally fiscal year 1990. The resulting statistics are summarized in Table I. This table also provides specific information on Caltrain (the Peninsula Commute Service, PCS) and, for comparison purposes, the San Francisco Bay Area Rapid Transit (BART) service.

Table 2 presents service information and operating statistics on the eight major services reporting.

In any use of this information, caution is urged, because no attempt has been made to assure that the data is based on uniform definition, and each service should be judged on its particular circumstances. For instance, operating costs cited are as reported by the respective services, yet there is reason to believe that the differentiation between capital and operating costs is not uniform.

The Caltrain service offers a good example of keeping the service characteristics in mind in using such gross data. The Caltrain service does not adequately serve its major market, the central business district of San Francisco. Our "typical" patron drives to the Caltrain depot where he or she pays a modest parking fee, comfortably rides an average 23.4 miles, and catches a Muni bus to a workplace two miles from the Caltrain San Francisco station, so the passenger is paying more than the train fare. Although there is a Peninsula Pass honored by the four major transit systems serving the Peninsula, the added cost for the pass is not reflected in these reported costs, nor are any auto parking charges.

In addition no attempt has been made to group the services to ascertain possible cost differences resulting from such basic factors as source of power, be it electricity or diesel fuel; labor rule requirements; or salary levels for the reporting services. As an example, the labor cost for engineers of the Caltrain service at $25.97 per hour is the highest reported for any

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Commuter costing

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commuter rail service.

•Observations. Although caution is urged in using these results, certain observations can reasonably be made from Table 1.

1. A service range of 14 to 30 miles, as reflected in the average trip length information, can be a valuable indicator of the possible demand service range. This range gives an indication of where marketing may have maximum effect.

2. The operating-cost-per-passenger range of 100% ($4 to $8) is suspected to be largely a function of the differences in power source, labor costs, meld of single trip and commuted fares, and charges for use of track. To obtain expected costs for proposed new systems, a detailed analysis is necessary.

3. Fare revenue per passenger data coupled with the trip length information gives an indication that the present market will accept a fare of about 11.5 cents per passenger-mile. This charge is a bargain for the single occupant auto driver and even for the two-occupant auto if it covers the major portion of the trip cost, since auto costs presently average from 25 cents to 35 cents per mile, including insurance.

4. At present, existing systems are not generating much income from non-passenger sources. This is reflected in the incremental increase shown for total revenue-per-passenger-mile information as compared with fare revenue per passenger-mile. It would appear that there are unaddressed opportunities in this area. For instance, income from rental of non-operating station areas has been a reliable source of revenue for the PCS.

5. The passenger-miles per train mile information is a gross figure that lumps peak and off-peak information together and is not of much value as presented since some of the reported services are more peak-period oriented than others. In the case of the PCS, the weekend and off-peak weekday ridership is growing at a faster rate than the peak-period ridership..

6.The peak vs. off-peak ratio for a particular service also corrupts the reported data for passenger-miles per train-mile. However, this factor is of value for indicating the worth of specific services and balancing train size with demand.

•How data was used. The information presented in Table 1 was used in the process of obtaining approval for changes in Caltrain's fare structure.These changes, effective Sept. 1, 1991, resulted in a modest fare increase averaging about 6%. Note that it took a full year from the date of the initial survey to implement the increase, a year and a half from the initial identification of the need for a fare adjustment. Ridership statistics for the first two months of the new fares indicate the goal of a 6% increase in income was obtained with no patronage decrease.

The data for BART included in Table 1 has been used by some to argue the relative roles of BART and Caltrain types of services. BART has many of the attributes of commute rail service, especially when considering its presently proposed line extensions. However, because of operational restrictions, such as inability to provide skip-stop service, it is less flexible than Caltrain in providing high speed service. The statistics indicate that with equal fare policies, the two services would have comparable operating costs per passenger-mile and a higher farebox recovery ratio for the PCS.

The survey results will be further used as follows:

1. To develop the service under the expected new service provider.

2. To identify possible changes in marketing strategy.

3. To identify possible efficiency and effectiveness improvement opportunities.

The reported data is a beginning to identification of operating costs for providing commuter rail services. Further work is needed, for example, to match costs with: power source (diesel vs. electric);.labor costs (for both operations and management); contract vs. owned services (including Amtrak vs. non-Amtrak contracted services); service levels (especially peak vs. off-peak and weekend services); fare policies (especially commuter and other reduced fares vs. single trip fares).

In addition, there is a need to define operating costs for commuter services in order to uniformly identify what costs should be charged to operations.

Adapted from a paper prepared for the Transportation Research Board. ■

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